

What is Claimed Is:

1. A method of immobilizing nitrate ions or nitrite ions in aqueous waste comprising the steps of :

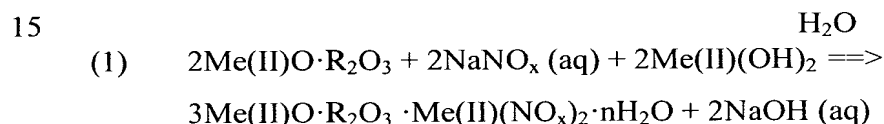
5 mixing the aqueous waste with a compound selected from the group consisting of  $\text{Me(II)O}$  and  $\text{Me(II)(OH)}_2$  and a compound selected from the group consisting of 1) a compound having the formula  $\text{Me(II)O} \cdot \text{R}_2\text{O}_3$ , and 2) a compound having the formula  $\text{R}_2\text{O}_3$ ,  $\text{R(OH)}_3$  or  $\text{ROOH}$ ,

where  $\text{Me(II)}$  is a cation selected from the group consisting of Ca, Ba, Sr, Mn, Zn and combinations thereof,

10 R is selected from the group consisting of Al, Fe, Cr and combinations thereof;

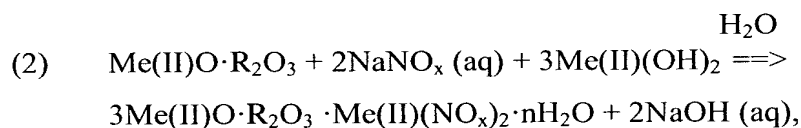
and allowing the waste to solidify.

2. The method of Claim 1, wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



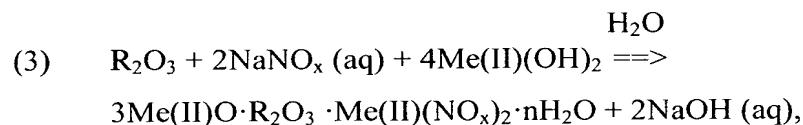
where x is 2 or 3 and n is at least 10.

20 3. The method of Claim 1, wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



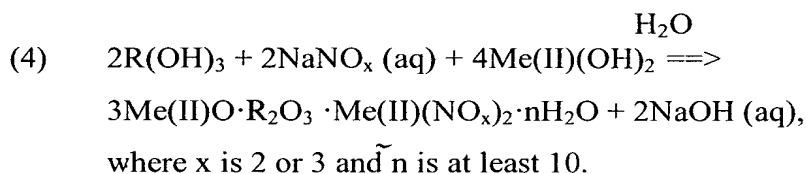
where x is 2 or 3 and n is at least 10.

25 4. The method of Claim 1, wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:

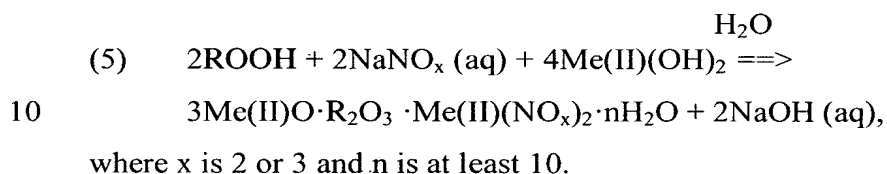


30 where x is 2 or 3 and n is at least 10.

5. The method of Claim 1, wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



6. The method of Claim 1, wherein the following reaction immobilizes the nitrate ions or nitrite ions in the aqueous waste:



7. The method of any one of Claims 1 through 6, wherein Me(II) is Ca.

8. The method of any one of Claims 1 through 6, wherein R is Al.

15 9. The method of any one of Claims 1 through 6, wherein Me(II) is Sr.

10. The method of any one of Claims 1 through 6, wherein R is Fe.

11. The method of any one of Claims 1 through 6, wherein Me(II) is Ca and R is Al.

20 12. The method of any one of Claims 1 through 6,, wherein Me(II) is Ca and R is Fe.

13. The method of any one of Claims 1 through 6, where Me(II) is Sr.

14. The method of Claim 1, wherein the solidified waste is characterized as having a crystalline structure which entraps aqueous waste within the pore structure of the solid.

15. The method of any one of Claims 1 through 6, wherein Me(II)(OH)<sub>2</sub> is replaced by Me(II)O.

16. The method of any one of Claims 1 through 6, wherein the aqueous waste is low level nuclear waste.

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